

IN THE CLAIMS

Please cancel claims 1-22, 24-26 and 40-63, without prejudice, and add new claims 64-91, as follows:

64. (New) A method for removing etching and resist material from a multi-level substrate, comprising the steps of:

(a) forming a photoresist layer on a substrate level comprising a metal;

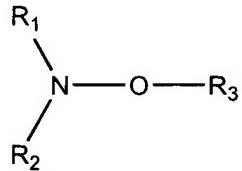
(b) exposing a portion of the photoresist layer, leaving a portion of the photoresist layer unexposed, and removing unreacted photoresist so that a resist pattern is formed;

(c) etching at least a portion of the substrate, using the resist pattern as a mask; and

(d) contacting the etched substrate with a cleaning composition at a temperature of between about room temperature and 100°C, to remove the resist pattern and etching residue from the etched substrate,

wherein the cleaning composition comprises:

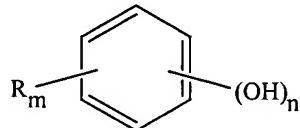
(a) from about 5% to 50% by weight of hydroxylamine or a derivative thereof having a general formula of:



wherein R₁, R₂, and R₃ are independently hydrogen; a hydroxyl group; a C₁-C₆ straight, branched or cyclo alkyl, alkenyl, or alkynyl group; an acyl group; a straight or branched alkoxy group, amidyl group, carboxyl group, alkoxyalkyl group, alkylamino group, alkylsulfonyl group, or sulfonic acid group; or a salt thereof;

(b) from about 10% to 80% by weight of at least one organic solvent miscible with the hydroxylamine or the hydroxylamine derivative;

(c) from about 5% to 30% by weight of an aromatic hydroxy-functional compound having a general formula of:



wherein n=1-4, m=2-5 and each R is independently hydrogen; a C₁-C₆ straight, branched or cyclo alkyl, alkenyl, or alkynyl group; an acyl group; a straight or branched alkoxy

group, amidyl group, carboxyl group, alkoxyalkyl group, alkylamino group, alkylsulfonyl group, or sulfonic acid group; or a salt thereof; and

(d) water.

65. (New) The method of claim 64, wherein the hydroxylamine or derivative thereof comprises hydroxylamine, which is added as a 50% aqueous solution.

66. (New) The method of claim 64, wherein the composition comprises more than one organic solvent.

67. (New) The method of claim 66, wherein:

(a) the hydroxylamine or derivative thereof comprises hydroxylamine or an alkyl or carboxyl substituted hydroxylamine derivative;

(b) the more than one organic solvent comprises:

(1) an alkanolamine selected from the group consisting of monoethanolamine, diethanolamine, triethanolamine, tert-butyldiethanolamine, isopropanolamine, 2-amino-1-propanol, 3-amino-1-propanol, isobutanolamine, 2-amino-2-ethoxy-propanol, and diglycolamine; and

(2) a non-amine solvent selected from the group consisting of dimethylsulfoxide, N-methyl-2-pyrrolidinone, N,N-dimethylpropanamide, N,N-dimethylformamide, ethylene glycol, ethylene glycol alkyl ether, diethylene glycol alkyl ether, triethylene glycol alkyl ether, propylene glycol, propylene glycol alkyl ether, dipropylene glycol alkyl ether, tripropylene glycol alkyl ether, and N-substituted pyrrolidone; and

(c) the aromatic hydroxy-functional compound comprises a dihydroxybenzene.

68. (New) The method of claim 67, wherein the at least one organic solvent comprises (1) a monoamine and (2) dimethylsulfoxide.

69. (New) The method of claim 68, wherein the monoamine is at least one selected from the group consisting of monoethanolamine and diglycolamine.

70. (New) The method of claim 69, wherein the monoamine consists essentially of monoethanolamine.

71. (New) The method of claim 67, wherein the hydroxylamine or derivative thereof comprises hydroxylamine.

72. (New) The method of claim 70, wherein the hydroxylamine or derivative thereof comprises hydroxylamine.

73. (New) The method of claim 67, wherein the aromatic hydroxy-functional compound comprises at least one of 1,2-dihydroxy-4-t-butylbenzene and 1,2-dihydroxybenzene.

74. (New) The method of claim 70, wherein the aromatic hydroxy-functional compound comprises at least one of 1,2-dihydroxy-4-t-butylbenzene and 1,2-dihydroxybenzene.

75. (New) The method of claim 72, wherein the aromatic hydroxy-functional compound comprises at least one of 1,2-dihydroxy-4-t-butylbenzene and 1,2-dihydroxybenzene.

76. (New) The method of claim 64, wherein the cleaning composition comprises from 30% to 60% by weight of the at least one organic solvent miscible with the hydroxylamine or hydroxylamine derivative.

77. (New) The method of claim 64, wherein the contacting of the etched substrate with the cleaning composition is performed for about 2 to 60 minutes.

78. (New) The method of claim 77, wherein the contacting of the etched substrate with the cleaning composition is a two step process, the first step comprising contacting for about 30 minutes at a temperature of about 65°C, and the second step comprising contacting for about 10 minutes at a temperature from about 80-85°C.

79. (New) A method for removing etching and resist material from a multi-level substrate, comprising the steps of:

- (a) forming a photoresist layer on a substrate level comprising a metal;
- (b) exposing a portion of the photoresist layer, leaving a portion of the photoresist layer unexposed, and removing unreacted photoresist so that a resist pattern is formed;
- (c) etching at least a portion of the substrate, using the resist pattern as a mask; and

(d) contacting the etched substrate with a cleaning composition at a temperature of between about room temperature and 100°C, to remove the resist pattern and etching residue from the etched substrate,

wherein the cleaning composition consists essentially of:

- (1) about 17.5 parts of hydroxylamine;
- (2) about 27 parts of an alkanolamine solvent;
- (3) about 5 parts of 1,2-dihydroxybenzene;
- (4) about 33 parts of dimethylsulfoxide solvent; and
- (5) from about 17.5 to about 37.5 parts water.

80. (New) The method of claim 79, wherein the contacting of the etched substrate with the cleaning composition is performed for about 2 to 60 minutes.

81. (New) The method of claim 80, wherein the contacting of the etched substrate with the cleaning composition is a two step process, the first step comprising contacting for about 30 minutes at a temperature of about 65°C, and the second step comprising contacting for about 10 minutes at a temperature from about 80-85°C.

82. (New) The method of claim 79, wherein the alkanolamine is a monoamine.

83. (New) The method of claim 82, wherein the monoamine is at least one selected from the group consisting of monoethanolamine and diglycolamine.

84. (New) The method of claim 83, wherein the monoamine consists essentially of monoethanolamine.

85. (New) The method of claim 79, wherein the substrate layer comprises titanium.

86. (New) The method of claim 79, wherein the substrate layer comprises aluminum.

87. (New) The method of claim 79, wherein the substrate layer comprises tungsten.

88. (New) The method of claim 79, further comprising ashing the resist and etching residue after the step of etching.

89. (New) The method of claim 88, wherein the substrate layer comprises titanium.
90. (New) The method of claim 88, wherein the substrate layer comprises aluminum.
91. (New) The method of claim 88, wherein the substrate layer comprises tungsten.